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ABSTRACT

A study examined the extent to which reported familiarity, reported utility, and perceived applicability of content area reading strategies were related to teaching in the primary grades. A total of 68 first- through third-grade teachers representing 6 elementary schools in 2 districts responded to the Content Area Questionnaire. Frequency analyses indicated moderate to large effects of knowledge, use, and recommendation of selected strategies considered general to reading comprehension. Variables reflecting years of teaching experiences, years of experience at current grade level, related workshop attendance, and related graduate coursework were analyzed to determine their effect on the three independent variables. The only variable that appeared not to affect the independent variables was years of teaching experience. (Contains 89 references and numerous unnumbered tables of data.) (Author/RS)

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A Comparison of Teachers' Knowledge and Use of Content Reading Strategies in The Primary Grades

ED 393 065

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Abstract

The extent to which (a) reported familiarity, (b) reported utility, and (c) perceived applicability of content area reading strategies are related to teaching in the primary grades was examined, based upon the response of first through third grade teachers in two school districts. A total of 68 teachers representing six elementary schools, responded to the Content Area Questionnaire. Frequency analyses indicated moderate to large effects of knowledge, use, and recommendation of selected strategies considered general to reading comprehension. Variables reflecting years of teaching experience, years of experience at current grade level, related workshop attendance, and related graduate coursework were analyzed to determine their effect on the three independent variables. The only variable that appeared not to affect the independent variables was years of teaching experience.

Over the past 20 years, extensive research has been conducted in the area of content reading, examining strategies used by readers to comprehend expository text (Kletzien, 1991; Weaver & Kintsch, 1991). A close examination of reading in content areas has led to the conclusion that one of the primary instructional concepts employed in classrooms is based on the schema-interactive theory. Much of the basis for this theory stems from the work of Bartlett. In the 1930s, Bartlett observed that subjects with no previous experience with an Indian folktale, attempted to force their reading observations into "preexisting knowledge structures" (Weaver & Kintsch, 1991, p. 231) called schema. Bartlett used the term schema to explain how information stored in the mind can be integrated into knowledge with repeated use.

Further investigations into schema theory by Perfitti (1975) and Rumelhart (1976) outlined the interaction between reader and text in the construction or interpretation of meaning. Smith describes this interaction as the ability of the reader to construct "a theory of the world" (1994, p. 183). Combining the syntactic and semantic knowledge the reader possesses with the ability to predict and confirm a hypothesis during the reading process, suffices as a definition of comprehension. The reader's use of these resources occurs simultaneously to bring meaning to and extract meaning from text. This process can best be described as a "feedback loop [whereby] the reader's knowledge resources are increasing as he reads and becomes available for background or prior knowledge for subsequent reading of a text" (Singer, 1987, p. 102-103).

Only when students are able to use their prior knowledge of the topic, their

awareness of textbook parts, their understanding of the task, and their use of learning and reading strategies (Archambeault, 1992) will they be successful in content area reading. Weaver and Kintsch (1991) state that in reading expository text, "learning from texts, not comprehension or text recall, is the goal" (p. 238). Reading proficiency increases when teachers view "content reading as 'content communication' focusing on good teaching practices which are designed to teach . . . the essential concepts of subject matter areas" (Readence, Baldwin, & Dishner, 1980, p. 9). Readence, Bean, and Baldwin (1992) included five developmental states needed to successfully implement content area communication: 1) awareness of strategies, 2) knowledge, 3) simulation or modeling, 4) practice, and 5) incorporation.

McKenna and Robinson (1990) assert that the most effective way to ensure the success of content communication is through content literacy, defined as "the ability to use reading and writing for the acquisition of new content in a given discipline" (p. 184). Each discipline has content specific terminology which may not transfer from one discipline to another. Thus, it is vital that classroom teachers acquaint themselves with reading and writing strategies, their functions, and their uses in order to enhance content literacy.

Textbooks and content area reading have traditionally been viewed as the domain of secondary education (Armbruster, Anderson, & Meyer, 1991; Gee, Olsen, & Forester, 1989; Moore, Readence, & Rickelman, 1983). The primary focus of previous research on content reading strategies has concentrated on high school, middle school, (McGee & Richgels, 1985; Moore, Readence, & Rickelman, 1983; Piccolo,

1987), a focus that Moore et al. find "curious because elementary-age students regularly read content area materials, too" (p.434). Research seems to indicate that the primary use that students make of textbooks is to acquire information (Adams, Carnine, & Gersten, 1982), but that student reading of textbooks is not as prevalent as has been previously thought (Armbruster, Anderson, Armstrong, Wise, Janisch, & Meyer, 1991). While the reading of content area text has been perceived to be too difficult for elementary school students (Alvermann & Boothby, 1982; Armbruster, Anderson, & Ostertag, 1989; Flood, 1986), children as young as kindergarten have been found to possess a rudimentary knowledge of information text (Pappas, 1990). How do primary grade teachers view content area reading and its associated strategies?

The purpose of this study was to determine whether specific content area reading strategies are being implemented in the primary grades, and the extent and appropriateness of including them in classroom practice. Three research questions were addressed:

1. Are teachers in grades one through three familiar with content area reading strategies?

2. How frequently are content area reading strategies used?

3. Are specific content area reading strategies perceived as applicable by primary teachers?

4. What effect do the factors of experience, experience at grade level, workshop attendance, and graduate courses taken have on the primary variables of familiarity, utility, and perceived applicability of techniques?

Methodology

Sample

The sample consisted of 58 teachers who completed the questionnaire, from two school districts located in the southeastern United States. The primary teachers included in the sample were first grade (n = 23), second grade (n =16), and third grade (n = 19). Participants ranged from first year classroom teachers to teachers with 33 years of experience.

Instrumentation

An instrument entitled the Content Area Questionnaire was developed and used to survey the sample. The questionnaire which was developed by the authors to collect demographic data and information regarding content reading strategies consists of two sections: (1) a request for demographic information related to group membership (i.e., years of teaching experience, age, grade level taught, years teaching the specific grade level, attendance at content reading workshops, and previous enrollment in content reading courses); and (2) a list of 44 items reflective of content area strategies. The second section of the questionnaire was divided into three parts: (1) a yes/no response to indicate familiarity with each of 44 content area strategies; (2) a rating of how frequently the respondent uses one of the 44 strategies (often, sometimes, never); and (3) a yes/no response to determine if teachers perceive specific strategies as applicable to classroom instruction in the primary grades. The Content Area Questionnaire may be administered individually or in a group setting; approximately 20 minutes was required to respond to the questionnaire.

The list of items contained in the second section of the Content Area Questionnaire was compiled after a review of literature which included a search of ERIC citations, textbooks, Dissertation Abstracts, and the snowball method, which involves a follow-up search of pertinent references extracted from articles (Weitzel, 1990). Forty-four content area strategies were identified from the review of literature and are included as items in the questionnaire with the specific sources of information supporting inclusion of each item as follows:

1. advanced/graphic organizers (Armbruster, Anderson, & Meyer, 1991; Armbruster, Anderson, & Ostertag, 1989; Bean, Singer, Sorter, & Frazee, 1986a; Bean, Singer, Sorter, & Frazee, 1986b; Armbruster, Anderson, & Ostertag, 1989; Darch, Carnine, & Kameenui, 1986; Gena, 1983; Readence, Bean, & Baldwin, 1992; Slater, Graves, & Piche, 1985; Townsend & Clarihew, 1989)
2. analogies (Alexander &Kulikowich, 1991; Readence, Bean, & Baldwin, 1992)
3. anticipation guides (Armstrong, Patberg, & Dewitz, 1988; Bean, Singer, & Cowan, 1985; Cunningham,& Shablak, 1975; Readence, Bean, & Baldwin, 1992)
4. cloze procedure (Conley, 1992; Durkin, 1993; Henk, 1981; Readence, Bean, & Baldwin, 1992; Singer & Donlan, 1989; Weaver, 1994)
5. computer programs (Bosco, 1989; Conley, 1992; Dede, 1987; Durkin, 1993; Readence, Bean, & Baldwin, 1992)

6. conferencing (Konopak, Martin, & Martin, 1987; Weaver, 1994)
7. DRA (Donlan, 1985; Manzo, 1975; Patberg, 1979; Ryder, 1991)
8. DRTA (Bauman, 1992; Readence, Bean, & Baldwin, 1992; Santa, 1988; Weaver, 1994)
9. discussion forums (Alvermann & Hayes, 1989; Alvermann, O'Brien, & Dillon, 1990; Conley, 1992; Durkin, 1993; Goldenberg, 1992; Hynd, Qian, Ridgeway, & Pickle, 1991; Manzo & Casale, 1985; Santa, Dailey, & Nelson, 1985; Weaver, 1994)
10. drama (Dupont, 1992; Durkin, 1993; Shoop, 1986; Weaver, 1993)
11. enrichment activities (Guthrie, 1979; Head-Windeatt, 1986; Larson, & Dansereau, 1986; Moorman, & Blanton, 1990)
12. guided writing (Bridge, & Hiebert, 1985; Davey, 1987; Eanet, & Manzo, 1976; Konopak, Martin, & Martin, 1990; Readence, Bean, & Baldwin, 1992; Shanahan, 1988; Smith,& Bean, 1980)
13. inserted questions (Farley, 1971; Shavelson, 1972; Yopp-Nolte,& Singer, 1985)
14. interest inventories (Conley, 1992; Durkin, 1993; Readence, Bean, & Baldwin, 1992; Wolfson, Manning, & Manning, 1984)
15. LEA (Dishner, 1992; May, 1994; McGee, 1985; Norton, 1994; Reeves, 1989; Weaver, 1994)
16. List-Group-Label (Readence, Bean, & Baldwin, 1992; Readence & Searfoss, 1980; Thomas, 1988)

17. journal writing (Conley, 1992; Durkin, 1993; Kirby & Liner, 1981; Readence, Bean, & Baldwin, 1992; Weaver, 1994)
18. matching definitions (McIntyre, 1980; Readence, Bean, & Baldwin, 1992)
19. mini-projects (Readence, Bean, W. & Baldwin, 1992)
20. modeling (Armbruster, Anderson, & Ostertag, 1989; Conley, 1992; Gee, 1987; Readence, Bean, & Baldwin, 1992; Weaver, 1994)
21. modeling from text (Armbruster, Anderson, & Ostertag, 1989; Conley, 1992; Duffy, Roehler, & Hermann, 1988; Readence, Bean, & Baldwin, 1992)
22. morphemic analysis (Karlin, 1973; McNaughton, 1994; Readence, Bean, & Baldwin, 1992)
23. meaning negotiation (Conley, 1992; Hayes, 1991; Weaver, 1994; Weber, 1987)
24. oral conflict resolution (Peters, 1987; Pontecorvo & Zucchermaglio, 1986)
25. pattern guides (McNeil, 1994; Wood, 1992)
26. phonics (Durkin, 1993; Weaver, 1994)
27. prediction (Afflerbach, & Walker, 1990; Atwell, 1985; Bean, Sorter, Singer, & Frazee, 1986; Durkin, 1993; Meyer, Brandt, & Bluth, 1980; Nichols, 1983; Readence, Bean, & Baldwin, 1992; Simpson, Stahl, & Hayes, 1989; Weaver, 1994)
28. prior knowledge (Conley, 1994; Crafton, 1983; Flood, Mathison, Lapp, & Singer, 1989; Gordon, 1990; Kletzien, 1991; Patberg, 1979; Pritchard,

1990; Readence, Bean, W. & Baldwin, 1992; Reinking, 1986; Stevens, 1982; Zakaluk, Samuels, & Taylor, 1986)

29. puzzles (Mountain, L., 1985; Readence, Bean, & Baldwin, 1992)
30. questioning techniques (Armbruster, Anderson, Armstrong, Wise, Janisch, & Meyer, 1991; Conley, 1992; Gillespie, 1990; Hansen,& Pearson, 1983; Manzo, 1969; Raphael, 1984; Singer & Donlan, 1989; Yopp-Nolte,& Singer, 1985)
31. reciprocal teaching (Conley, 1992; Durkin, 1993; Manzo, 1969)
32. reports/self-reporting (Singer & Donlan, 1989; Hare, V. C., 1982)
33. scaffolding (Durkin, 1993; Pritchard, 1990; Weaver, 1994)
34. scrambled words (Readence, Bean, & Baldwin, 1992)
35. semantic mapping (Conley, 1992; Durkin, 1993; Fry, 1981; Naughton, 1993; Readence, Bean, & Baldwin, 1992; Weaver, 1994)
36. structured overview (Conley, 1992; Durkin, 1993; Maring, 1985)
37. study guides (Adams, Carnine, & Gersten, 1982; Conley, 1992; Davey, 1987; Eanet, & Manzo, 1976; Readence, Bean, & Baldwin, 1992)
38. summarizing (Bean, & Steenwyk, 1984; Conley, 1992; Hill, 1991; Readence, Bean, & Baldwin, 1992)
39. surveying text (Baumann, 1984; Conley, 1992)
40. think aloud (Baumann, Jones, & Seaforth-Kessell, 1993; Durkin, 1993; Readence, Bean, & Baldwin, 1992; Weaver, 1994)
41. KWL three level guide (Conley, 1992; Durkin, 1993; Readence, Bean, &

Baldwin, 1992; Weaver, 1994)

42. use of text structure (Conley, 1992; Gordon, 1990; Henk, 1988; Kletzien, 1991; McGee & Richgels, 1985; Piccolo, 1987; Readence, Bean, & Baldwin, 1992; Sammons & Davey, 1993)

43. vocabulary cloze (Carr, 1989; Readence, Bean, & Baldwin, 1992; Weaver, 1994)

44. word maps (Readence, Bean, & Baldwin, 1992; Schwartz & Raphael, 1985)

The Content Area Questionnaire was field tested using a sample of 16 preservice teachers, who responded to the instrument and made suggestions for improving it. Their suggestions were incorporated into the instrument.

Procedures

After field testing the Content Area Questionnaire, letters were sent to the superintendents of each school district, requesting permission to administer the survey. Upon receiving consent to distribute the questionnaires, personal contact with each school's principal was made by one of the researchers. To minimize disruption to the classroom teachers' schedules, the surveys were forwarded to each principal along with directions for completing each part of the survey. The surveys were distributed by hand to each of the first through third grade teachers in each school. Questionnaires were collected in person one week after each school had received their copies.

Results

Responses from a total of 68 respondents were included in the data analysis.

The instrument used for the study yielded three scores which were treated as dependent variables. These scores were the totals from the three columns; the first column being yes/no (1=no; 2=yes) response to indicate familiarity with each of 44 content area strategies; The second column indicated the frequency with which the respondent used each of the 44 strategies (3=often, 2=seldom, 1=never). The third column provided opportunity for a yes/no response (1=no; 2=yes) to determine whether teachers perceived that each strategy was applicable to classroom instruction in the primary grades. Four independent variables were used in order to determine what factors might affect teachers' familiarity with, utility of, and sense of applicability about content area strategies.

Years of Teaching Experience

1= 5 years of experience or less;

2 = 6-10 years of experience;

3 = 11-15 years of experience;

4 = 16-20 years of experience; and

5 = over 20 years of experience.

Years of Experience at Current Grade Level

1 = 5 years of experience or less;

2 = 6-10 years of experience;

3 = 11-15 years of experience;

4 = 16-20 years of experience; and

5 = over 20 years of experience.

Content Area Workshop Attendance (Yes or No)

Content Reading Course (Yes or No)

Frequency analyses were initially conducted on each of the separate strategies to ascertain the percentage of responses for each of the three groups: (1) familiarity with the strategy; (2) reported use of the strategy; and (3) applicability of the strategy to the primary classroom situation. The frequency analyses were performed using the FREQUENCIES procedure in SPSSX.

Content Area Questionnaire- Frequency Responses for Each Methodology

Are you familiar with this strategy?			How often do you use this strategy?				Would you recommend using this strategy?				
Yes		No	U/O		U/S	U/N	A/O		A/S	A/N	
94.1	*1*	2.9	69.7	*14*	2.9	1.5	97.1	*4*	2.9	--	questioning techniques
91.2	*2*	4.4	91.2	*3*	2.9	--	97.1	*5*	--	--	phonics
88.2	*3*	92.3	89.7	*5*	*1.5*	--	95.6	*10*	2.9	--	guided writing
88.2	*4*	10.3	94.1	*1*	1.5	1.5	100	*1*	--	--	journal writing
88.2	*5*	92.3	89.7	*4*	1.5	--	98.5	*2*	--	--	enrichment activities
85.8	*6*	8.8	89.7	*6*	2.9	1.5	97.1	*8*	2.1	--	prediction
83.8	*7*	8.8	82.4	*8*	7.4	1.5	94.1	*13*	5.9	--	modeling
80.9	*8*	13.2	83.8	*7*	7.4	1.5	94.1	*12*	4.4	--	summarizing
73.5	*9*	17.6	73.5	*9*	13.2	1.5	92.6	*16*	5.9	--	modeling from text
69.7	*10*	7.4	91.2	*2*	1.5	1.5	98.5	*3*	1.5	--	prior knowledge
69.1	*11*	17.5	72.1	*12*	10.3	--	92.6	*14*	4.4	1.5	computer programs
69.1	*12*	14.7	67.6	*16*	11.8	1.5	85.8	*21*	11.8	--	think aloud
67.6	*13*	27.9	73.5	*10*	19.1	1.5	97.1	*6*	2.9	--	puzzles
66.2	*14*	16.2	66.2	*17*	13.2	1.5	82.4	*25*	17.5	--	inserted questions
64.7	*15*	16.2	69.1	*15*	11.8	1.5	85.3	*24*	13.2	--	oral conflict resolution
64.7	*16*	22.1	70.5	*13*	13.2	1.5	85.8	*22*	8.8	--	discussion forums
63.2	*17*	16.2	63.2	*19*	13.2	--	82.4	*27*	13.2	--	word map
61.8	*18*	26.5	61.8	*21*	25.0	4.4	97.1	*7*	2.9	--	matching definitions
61.8	*19*	29.4	72.1	*11*	17.6	1.5	92.6	*15*	7.4	--	mini-projects
61.8	*20*	14.7	55.9	*27*	16.2	1.5	79.4	*29*	17.5	--	use of text structure
60.3	*21*	23.5	61.8	*20*	20.5	2.9	91.2	*17*	8.8	--	study guide
60.3	*22*	19.1	63.2	*18*	13.2	--	82.4	*28*	16.2	--	structured overview
55.9	*23*	13.2	55.9	*26*	10.3	1.5	69.1	*33*	26.5	--	List-Group-Label
52.9	*24*	19.1	52.9	*30*	16.2	1.5	73.5	*32*	22.1	--	vocabulary cloze
51.5	*25*	35.3	54.4	*29*	29.4	2.9	89.7	*18*	8.8	--	scrambled words

50.0	*26*	42.5	58.8	*24*	29.4	1.5	95.6	*9*	4.4	--	analogies
50.0	*27*	13.2	42.5	*35*	14.5	1.5	61.8	*36*	32.4	--	meaning negotiation
48.5	*28*	17.6	47.1	*32*	20.5	--	67.6	*34*	29.4	--	pattern guide
48.5	*29*	33.8	57.4	*25*	25.0	1.5	85.3	*23*	11.8	--	reports/self-reporting
47.1	*30*	26.5	47.1	*33*	17.5	2.9	77.9	*31*	17.6	--	cloze procedure
47.1	*31*	23.5	50.0	*31*	22.1	1.5	77.9	*30*	17.5	1.5	surveying text
45.6	*32*	32.4	58.8	*22*	22.1	--	82.4	*26*	14.7	--	semantic mapping
44.1	*33*	5.9	42.5	*34*	5.9	7.4	89.7	*19*	7.4	1.5	conferencing
44.1	*34*	5.9	42.5	*36*	5.9	7.4	48.5	*39*	41.2	--	DRA
42.6	*35*	14.7	42.5	*37*	16.2	4.4	66.2	*35*	29.4	--	reciprocal teaching
42.6	*36*	10.3	41.2	*38*	7.4	1.5	55.9	*37*	38.2	--	morphemic analysis
39.7	*37*	5.9	41.2	*40*	5.9	5.9	44.1	*40*	44.1	--	DRTA
38.2	*38*	52.9	54.4	*28*	35.8	1.5	94.1	*11*	2.9	--	drama
38.2	*39*	10.3	41.2	*39*	7.4	5.9	51.5	*38*	42.6	--	LEA
35.3	*40*	7.4	32.4	*41*	11.8	4.4	41.2	*41*	54.4	--	advanced organizers
32.4	*41*	57.4	58.8	*23*	27.9	2.9	89.7	*20*	5.9	--	interest inventories
27.9	*42*	7.4	27.9	*42*	5.9	5.9	35.8	*43*	51.5	--	KWL three level guide
23.5	*43*	10.3	22.1	*43*	10.3	7.4	32.4	*44*	58.8	--	scaffolding
0.6	*44*	14.7	19.1	*44*	19.1	4.4	38.2	*42*	55.9	--	anticipation guides

Note. The numbers in *italics* represent the rank order of the items in each category.

Survey responses were also analyzed using a one-way analysis of variance to ascertain statistical significance. The first set of four ANOVAs tested for differences between the variable of familiarity with content area reading methods, and the four factors of teaching experience, teaching experience at current grade level, attendance at a content area reading workshop, and post-baccalaureate coursework in content area reading. The first ANOVA tested for differences in familiarity with content area reading methods, and teaching experience.

Variable Column 1 - Familiarity
By Variable Teaching Experience
Analysis of Variance

Source	d.f.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	236.1000	59.0250	.4265	.7853
Within Groups	5	692.0000	138.4000		
Total	9	928.1000			

Group	Count	Mean
5 years of experience or less	4	69.0000
6-10 years of experience	1	77.0000
11-15 years of experience	3	80.0000
16-20 years of experience	1	78.0000
over 20 years of experience	1	72.0000
Total	10	74.3000

As can be seen, an F-ratio of less than 1, and a probability of .79 suggest that years of teaching experience is not related to familiarity with methods used in content area reading instruction.

The second ANOVA tested the effect of experience at grade level on familiarity with methods used in content area reading instruction.

Variable Column 1 - Familiarity
By Variable Experience at Grade Level
Analysis of Variance

Source	d.f.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	457.6459	228.8229	3.8548	.0271
Within Groups	55	3264.8369	59.3607		
Total	57	3722.4828			

Scheffe's Test

Group	Count	Mean	Standard Deviation	GRP 1	GRP 2	GRP 3	GRP 4
5 years of experience or less	22	82.0455	4.7857	1	*		
6-10 years of experience	17	75.6471	10.6121	2			
11-15 years of experience	19	77.0000	7.3862	3			
Total	58	78.5172	8.0813	4			

A significant difference was found to exist between teachers with 5 years of experience or less, and teachers with between 6 and 10 years of experience. An inspection of the means indicates that recently certified primary teachers tend to have more familiarity with content area teaching than do more experienced teachers.

The third ANOVA, which could have been answered by an independent t-test equally adequately, but was expressed as an ANOVA for continuity, tests the effect of attendance at one or more workshops dealing with some aspect of content area reading instruction, and familiarity with methods used to develop skill in content area reading instruction.

Variable Column 1 - Familiarity
By Variable Related Workshop
Analysis of Variance

Source	D.f.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	429.2006	429.2006	7.2731	.0094
Within Groups	53	3127.6357	59.0120		
Total	54	3556.8364			

Group	Count	Mean	Standard Deviation	Standard Error
Yes	35	80.2571	7.8228	1.3223
No	20	74.4500	7.4231	1.6599
Total	55	78.1455	8.1159	1.0943

A statistical difference existed between the group of teachers who reported attending at least one content area workshop and those who reported not having

attended a content area workshop on reported familiarity with methods for developing skill in content area reading instruction.

ANOVA 4 tested for differences in teachers who had a post-baccalaureate course in content area reading instruction and those who had no coursework in content area reading instruction.

Variable Column 1 - Familiarity
By Variable Graduate Coursework
Analysis of Variance

Source	D.f.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	236.9063	236.9063	4.9297	.0306
Within Groups	54	2595.0937	48.0573		
Total	55	2832.0000			

Group	Count	Mean	Standard Deviation	Standard Error
Yes	32	80.7813	6.4395	1.1383
No	24	76.6250	7.5459	1.5403
Total	56	79.0000	7.1757	.9589

A statistical difference existed between the group of teachers who reported having at least one course in content area reading and those who reported not having had any courses in content area reading on reported familiarity with methods for developing skill in content area reading instruction.

The second set of four ANOVAs tested for differences between the variable of utility of content area reading methods, and the four factors of teaching experience, teaching experience at current grade level, attendance at a content area reading workshop, and post-baccalaureate coursework in content area reading. The fifth ANOVA tested for differences in utility of content area reading methods, and teaching

experience.

Variable Utility
By Variable Teaching Experience
Analysis of Variance

Source	D.f.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	1961.7500	490.4375	1.1853	.4184
Within Groups	5	2068.7500	413.7500		
Total	9	4030.5000			

Group	Count	Mean	Standard Deviation	Standard Error
Grp 1	4	67.2500	13.5984	6.7992
Grp 2	1	91.0000		
Grp 3	3	96.0000	27.5136	15.8850
Grp 4	1	103.0000		
Grp 5	1	84.0000		
Total	10	83.5000	21.1621	6.6920

As can be seen, an F-ratio of 1.185, and a probability of .42 suggest that years of teaching experience is not related to utility of methods used in content area reading instruction.

The sixth ANOVA tested the effect of experience at grade level on utility of methods used in content area reading instruction.

Variable Utility
By Variable Experience at Grade Level
Analysis of Variance

Source	D.f.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	5485.5446	2742.7723	6.4630	.0030
Within Groups	55	23341.0761	424.3832		
Total	57	28826.6207			

Group	Count	Mean	Standard Deviation	Standard Error	G R P 1	G R P 2	G R P 3
Grp 1	22	109.6818	15.3666	3.2762		*	*
Grp 2	17	89.6471	23.7064	5.7496			
Grp 3	19	89.6316	22.8405	5.2400			
Total	58	97.2414	22.4884	2.9529			

A significant difference was found to exist between teachers with 5 years of

experience or less, and teachers with between 6 and 10 years of experience and teachers with 11 to 15 years of experience. An inspection of the means indicates that recently certified primary teachers tend to report using methods associated with content area teaching than do more experienced teachers.

The seventh ANOVA, which could have been answered by an independent t-test equally adequately, but was expressed as an ANOVA for continuity, tests the effect of attendance at one or more workshops dealing with some aspect of content area reading instruction, and reported utility of methods used to develop skill in content area reading instruction.

Variable Utility
By Variable Workshop Attendance

Analysis of Variance

Source	D.f.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	3936.0026	3936.0026	9.1562	.0038
Within Groups	53	22783.3429	429.8744		
Total	54	26719.3455			

Group	Count	Mean	Standard Deviation	Standard Error
Grp 1	35	102.2857	19.2943	3.2613
Grp 2	20	84.7000	23.0859	5.1622
Total	55	95.8909	22.2442	2.9994

A statistical difference existed between the group of teachers who reported attending at least one content area workshop and those who reported not having attended a content area workshop on reported utility of methods for developing skill in content area reading instruction.

ANOVA 8 tested for differences in teachers who had a post-baccalaureate course in content area reading instruction and those who had no coursework in content

area reading instruction.

Variable Utility
By Variable Graduate Coursework

Analysis of Variance

Source	D.f.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	2110.8348	2110.8348	4.4787	.0389
Within Groups	54	25450.7187	471.3096		
Total	55	27561.5536			

Group	Count	Mean	Standard Deviation	Standard Error
Grp 1	32	103.1563	22.1478	3.9152
Grp 2	24	90.7500	21.1048	4.3080
Total	56	97.8393	22.3857	2.9914

A statistical difference existed between the group of teachers who reported having at least one course in content area reading and those who reported not having had any courses in content area reading on reported utility of methods for developing skill in content area reading instruction.

The third set of four ANOVAs tested for differences between the variable of applicability of content area reading methods, and the four factors of teaching experience, teaching experience at current grade level, attendance at a content area reading workshop, and post-baccalaureate coursework in content area reading. The ninth ANOVA tested for differences in knowledge about content area reading methods and teaching experience.

Variable Perceived Applicability
By Variable Teaching Experience

Analysis of Variance

Source	D.f.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	2667.4833	666.8708	1.4061	.3530
Within Groups	5	2371.4167	474.2833		
Total	9	5038.9000			

Group	Count	Mean	Standard Deviation	Standard Error

Grp 1	4	72.2500	20.3859	10.1929
Grp 2	1	91.0000		
Grp 3	3	97.6667	23.7136	13.6910
Grp 4	1	123.0000		
Grp 5	1	75.0000		
Total	10	87.1000	23.6617	7.4825

As can be seen, an F-ratio of 1.4061, and a probability of .35 suggest that years of teaching experience is not related to perceived applicability of methods used in content area reading instruction.

The tenth ANOVA tested the effect of experience at grade level on utility of methods used in content area reading instruction.

Variable Perceived Applicability
By Variable Experience at Grade Level

Analysis of Variance

Source	D.f.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	2	2639.5132	1319.7566	3.1169	.0524
Within Groups	54	22864.5219	423.4171		
Total	56	25504.0351			

Group	Count	Mean	Standard Deviation	Standard Error
Grp 1	21	107.1429	16.3563	3.5692
Grp 2	17	95.2941	26.5466	6.4385
Grp 3	19	91.6316	18.6166	4.2709
Total	57	98.4386	21.3408	2.8267

No significant difference was found to exist between groups of teachers with varying degrees of experience at their current grade levels.

The eleventh ANOVA, which could have been answered by an independent t-test equally adequately, but was expressed as an ANOVA for continuity, tests the effect of attendance at one or more workshops dealing with some aspect of content area reading instruction, and perceived applicability of methods used to develop skill in content area reading instruction.

Variable Utility
By Variable Workshop Attendance

Analysis of Variance

Source	D.f.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	3585.3125	3585.3125	9.4091	.0034
Within Groups	52	19814.3912	381.0460		
Total	53	23399.7037			

Group	Count	Mean	Standard Deviation	Standard Error
Grp 1	34	103.3235	19.0243	3.2626
Grp 2	20	86.4500	20.3534	4.5512
Total	54	97.0741	21.0120	2.8594

A statistical difference existed between the group of teachers who reported attending at least one content area workshop and those who reported not having attended a content area workshop on perceived applicability of methods for developing skill in content area reading instruction.

ANOVA 12 tested for differences in teachers who had a post-baccalaureate course in content area reading instruction and those who had no coursework in content area reading instruction.

Variable Perceived Applicability
By Variable Graduate Coursework

Analysis of Variance

Source	D.f.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	2199.4909	2199.4909	5.5635	.0221
Within Groups	53	20953.3454	395.3461		
Total	54	23152.8364			

Group	Count	Mean	Standard Deviation	Standard Error
Grp 1	31	104.7097	20.0486	3.6008
Grp 2	24	91.9583	19.6656	4.0142
Total	55	99.1455	20.7064	2.7921

A statistical difference existed between the group of teachers who reported having at least one course in content area reading and those who reported not having

had any courses in content area reading on perceived applicability of methods for developing skill in content area reading instruction.

Discussion

Research suggests that students' primary purpose, when reading content area texts, is to acquire information (Adams, Carnine, & Gersten, 1982). This research has concentrated chiefly on children in grades 6-12, as expository text has been perceived as too difficult for elementary school students (Alvermann & Boothby, 1982; Armbruster, Anderson, & Ostertag, 1989; Flood, 1986). However, children as young as kindergarten have a fundamental knowledge of information text (Pappas, 1990). Therefore, it appears that children in the early elementary grades have been exposed to content area texts as a part of literacy acquisition and the reading process.

The results of this study supported the hypothesis that specific content area reading strategies are being implemented in the primary grades. Their impact is reflected by the results of this survey with regard to familiarity, perceived applicability and utility.

When examining teachers' familiarity with specific strategies, the most frequent responses were questioning techniques, phonics, guided writing, journal writing, enrichment activities, prediction, and modeling, with summarizing frequently used in the classroom. Experience at grade level, attendance at a content reading workshop, and post-baccalaureate coursework in content reading were contributing factors to the variable of familiarity. It is interesting to note that teachers who have 5 years of experience or less, and teachers who had enrolled in graduate coursework were found

to be more familiar with the specific reading strategies. This suggests that preservice teachers presently enrolled in undergraduate reading courses and teachers who are currently pursuing further studies are being instructed in the use of specific reading strategies.

For the second variable, utility, the most frequent responses were journal writing, prior knowledge, phonics, enrichment activities, guided writing, and prediction. Experience at grade level, attendance at a content reading workshop, and post-baccalaureate coursework in content reading were contributing factors to the variable of utility. Once again, this strongly suggests that preservice teachers and teachers enrolled in graduate courses have instruction which emphasizes content area reading strategies.

For the last variable, perceived applicability, the highest responses were journal writing, enrichment activities, prior knowledge, questioning techniques, phonics, puzzles, matching definitions, prediction, analogies, guided writing, summarizing, modeling, computer programs, mini-projects, modeling from text, and study guides. Experience at grade level, attendance at a content reading workshop, and post-baccalaureate coursework in content reading were contributing factors to the variable of perceived applicability.

The results of this study suggest that although teachers assume familiarity with content area reading strategies; many strategies that are recommended in the literature are unfamiliar to them. Teachers seem to use general strategies, such as journal writing with content area reading, rather than strategies such as advanced organizers,

which have been specifically developed to help with content area reading. This suggests that reading instruction should incorporate the use of learning and reading strategies, coupled with an awareness of textbook parts and an understanding of the content reading task.

References

Afflerbach, P., & Walker, B. (1990). Prediction instruction in basal readers. Reading Research and Instruction, 29(4), 26-45.

Alvermann, D. E., & Boothby, P. R. (1982). Text differences: Children's perceptions at the transition stage in reading. Reading Teacher, 36(3), 298-302.

Alvermann, D. E., O'Brien, D. G, & Dillon, D. R. (1990). What teachers do when they say they're having discussions of content area reading assignments: A qualitative analysis. Reading Research Quarterly, 25(4), 296-322.

Archambeault, B. (1992). Personalizing study skills in secondary students. Journal of Reading, 35(6), 468-472.

Armbruster, B. B., Anderson, T. H., Armstrong, J. L., Wise, M. A., Janisch, C., & Meyer, L. A. (1991). Reading and questioning in content area lessons. Journal of Reading Behavior, 23(1), 35-59.

Armbruster, B. B., Anderson, T. H., & Meyer, J. L. (1991). Improving content-area reading using instructional graphics. Reading Research Quarterly, 26 (4), 393-416.

Armbruster, B. B., Anderson, T. H., & Ostertag, J. (1989). Teaching text structure to improve reading and writing. Reading Teacher, 43(2), 130-137.

Armstrong, D. P., Patberg, J., & Dewitz., P. (1988). Reading guidelines--helping students understand. Journal of Reading, 31(6), 532-541.

Asher, S. R., Hymel, S., & Wigfield, A. (1978). Influence of topic interest on children's reading comprehension. Journal of Reading Behavior, 10(1), 35-47.

Atwell, M. A. (1985). Predictable books for adolescent readers. Journal of Reading, 29(1), 18-22.

Baumann, J. F. (1983). Six principles for the development of reading comprehension instructional methods and materials. Reading Improvement, 20(3), 187-192.

Baumann, J. F. (1984). The effectiveness of a direct instruction paradigm for teaching main idea comprehension. Reading Research Quarterly, 20(1), 93-115.

Bean, T. W., Singer, H., & Cowan, S. (1985). Analogical study guides: Improving comprehension in science. Journal of Reading, 29(3), 246-250.

Bean, T. W., Singer, H., Sorter, J., & Frazee, C. (1986). The effect of metacognitive instruction in outlining and graphic organizer construction on students' comprehension in a tenth-grade world history class. Journal of Reading Behavior, 18(2), 153-169.

Bean, T. W., Sorter, J., Singer, H., & Frazee, C. (1986). Teaching students how to make predictions about events in history with a graphic organizer plus options guide. Journal of Reading, 29(8), 739-745.

Bean, T. W., & Steenwyk, F. (1984). The effect of three forms of summarization on sixth graders summary writing and comprehension. Journal of Reading Behavior, 16(4), 297-306.

Beck, L., McKeown, M. G., Sinatra, R. M., & Loxterman, J. A. (1991). Revising social studies text from a text-processing perspective: Evidence of improved comprehensibility. Reading Research Quarterly, 26(3), 251-276.

Belloni, L. F. & Jongsma, E. A. (1978). The effects of interest on reading comprehension of low-achieving students. Journal of Reading, 22(2), 106-109.

Blanton, W. E., Wood, K. D., & Moorman, G. B. (1990). The role of purpose in reading instruction. Reading Teacher, 43(7), 486-493.

Bosco, J. (1989). The organization of schools and the use of computers to improve schooling. Peabody Journal of Education, 64(1), 111-129.

Bridge, C. A., & Hiebert, E. H. (1985). A comparison of classroom writing practices, teachers' perceptions of their writing instruction, and textbook recommendations on writing practices. Elementary School Journal, 86(2), 155-172.

Carr, E. (1989). Using cloze for inference training with expository text. Reading Teacher, 42(6), 380-385.

Conley, M. W. (1992). Content reading instruction: A communication approach. New York: McGraw-Hill.

Crafton, L. K. (1983). Learning from reading: What happens when students generate their own background information? Journal of Reading, 26(7), 586-592.

Cunningham, D., & Shablak, S. (1975). Selective reading guide-o-rama: The content teacher's best friend. Journal of Reading, 18(5), 380-382.

Darch, C. B., Carnine, D. W., & Kameenui, E. J. (1986). The role of graphic organizers and social structure in content area instruction. Journal of Reading Behavior, 18(4), 275-295.

Davey, B. (1987). Teams for success: Guided practice in study skills through cooperative research reports. Journal of Reading, 30(8), 701-705.

Dede, C. J. (1987). Empowering environments, hypermedia, and microworlds. Computing Teacher, 15(3), 20-24.

Duffy, G. G., Roehler, L. R., & Hermann, B. A. (1988). Modeling mental processes helps poor readers become strategic readers. Reading Teacher, 41(8), 762-767.

Durkin, D. (1993). Teaching them to read. Boston, MA: Allyn and Bacon.

Eanet, M. G., & Manzo, A. V. (1976). REAP - a strategy for improving reading/writing/study skills. Journal of Reading, 19(8), 647-652.

Flood, J. (1986). The text, the student, and the teacher: Learning from exposition in middle schools. Reading Teacher, 39(8), 784-791.

Flood, J., Mathison, C., Lapp, D., & Singer, H. (1989). Reading comprehension performance: The effects of teacher presentations and text features. Reading Research and Instruction, 29(1), 1-11.

Freebody, P., & Anderson, R. C. (1983). Effects of vocabulary difficulty, text cohesion, and schema availability on reading comprehension. Reading Research Quarterly, 18(3), 277-294.

Fry, E. (1981). Graphical literacy. Journal of Reading 24(5), 383-390.

Gee, T. C., Olson, M., & Forester, N. (1989). A survey of content reading program development in U.S. schools. Reading Research and Instruction, 28(3), 30-44.

Geva, E. (1983). Facilitating reading comprehension through flowcharting. Reading Research Quarterly, 18(4), 384-405.

Gillespie, C. (1991). Questions about student-generated questions. Journal of

Reading, 34(4), 250-257.

Goldenberg, C. (1993). Instructional conversations: Promoting comprehension through discussion. Reading Teacher, 46(4), 316-326.

Gordon, C. (1990). Changes in readers' and writers' metacognitive knowledge: Some observations. Reading Research and Instruction, 30(1), 1-14.

Gordon, C. J. (1990). Contexts for expository text structure use. Reading Research and Instruction, 29(2), 55-72.

Guthrie, J. T. (1979). Research: How we understand the news. Journal of Reading, 23(2), 162-164.

Hansen, J. & Pearson, P. D. (1983). An instructional study : Improving the inferential comprehension of good and poor fourth-grade readers. Journal of Educational Psychology, 75(6), 821-829.

Hare, V. C. & Smith, D. (1982). Reading to remember: Studies of metacognitive reading skills in elementary school-aged children. Journal of Educational Research, 75(3), 157-164.

Henk, W. A. (1981). Effects of modified deletion strategies and scoring procedures on cloze test performance. Journal of Reading Behavior, 13(4), 347-357.

Henk, W. A. (1988). Effects of top-level comparison-contrast text structures on reading comprehension performance. Reading Research and Instruction, 28(1), 1-17.

Hill, M. (1991). Writing summaries promotes thinking and learning across the curriculum--but why are they so difficult to write? Journal of Reading, 34(7), 536-539.

Hynd, C. R., Qian, G., Ridgeway, V. G. & Pickle, M. (1991). Promoting

conceptual change with science texts and discussion. Journal of Reading, 34(8), 596-601.

Kirby, D. & Liner, T. (1981). Inside out: Developmental strategies for teaching writing. Montclair, NJ: Boynton/Cook.

Kletzien, S. B. (1991). Strategy use by good and poor comprehenders reading expository text of differing levels. Reading Research Quarterly, 26(1), 67-86.

Konopak, B. C., Martin, S. H., & Martin, M. A. (1987). An integrated communication arts approach for enhancing students' learning in the content areas. Reading Research and Instruction, 26(4), 275-289.

Konopak, B. C., Martin, S. H., & Martin, M.A. (1990). Using a writing strategy to enhance sixth-grade students' comprehension of content material. Journal of Reading Behavior, 22(1), 19-37.

Konopak, B. C. & Williams, N. L. (1988). Using the keyword method to help young readers learn content material. Reading Teacher, 41(7), 682-687.

Larson, C. O., & Dansereau, D. F. (1986). Cooperative learning in dyads. Journal of Reading, 29(6), 516-520.

McGee, L. M., & Richgels, D. J. (1985). Teaching expository text structure to elementary students. Reading Teacher, 38(8), 739-748.

McKenna, M. C. & Robinson, R. D. (1990). Content literacy: A definition and implications. Journal of Reading, 34(3), 184-186.

Manzo, A. V. (1975). Guided reading procedure. Journal of Reading, 18(4), 287-291.

Manzo, A. V. (1969). The request procedure. Journal of Reading, 13(2), 123-126, 163.

Manzo, A. V., & Casale, U. P. (1985). Listen-read-discuss: A content reading heuristic. Journal of Reading, 28(8), 732-734.

Maring, G. H. (1985). Five cooperative learning strategies for mainstreamed youngsters in content area classrooms. Reading Teacher, 39(3), 310-313.

Meyer, B. J. F., Brandt, D., & Bluth, G. J. (1980). Use of top-level structure in text: Key for reading comprehension of ninth-grade students. Reading Research Quarterly, 16(1), 72-103.

Miller, S. D. & Smith, D. E. P. (1990). Relations among oral reading, silent reading and listening comprehension of students at differing competency levels. Reading Research & Instruction, 29(2), 73-84.

Moore, D. W. & Readance, J. E. (1983). Approaches to content area reading instruction. Journal of Reading, 26(5), 397-402.

Moore, D. W., Readance, J. E., & Rickelman, R. J. (1983). An historical exploration of content reading instruction. Reading Research Quarterly, 18(4), 419-438.

Moorman, G. B., & Blanton, W. E. (1990). The information text reading activity (ITRA): Engaging students in meaningful learning. Journal of Reading, 34(3), 174-183.

Mountain, L. (1985). Word puzzles for vocabulary development. Reading Horizons, 26(1), 16-24.

Naughton, V. M. (1993). Creative mapping for content reading. Journal of Reading, 37(4), 324-326.

Nichols, J. N. (1983). Using prediction to increase content area interest and understanding. Journal of Reading, 27(3), 225-228.

Patberg, J. P. (1979). Validation of reading strategies in secondary content areas. Journal of Reading, 22(4), 332-336.

Piccolo, J. A. (1987). Expository text structure: Teaching and learning strategies. Reading Teacher, 40(9), 838-847.

Pontecorvo, C., & Zucchermaglio, C. (1986). A passage to literacy: Learning in a social context. In Y. M. Goodman (Ed.), How children construct literacy: Piagetian perspectives. (pp. 59-98). Newark, DL: International Reading Association.

Pressley, M., Goodchild, F., Fleet, J., Zajchowcski, R., & Evans, E. D. (1989). The challenges of classroom strategy instruction. Elementary School Journal, 89(3), 301-342.

Pritchard, R. (1990). The effects of cultural schemata on reading processing strategies. Reading Research Quarterly, 25(4), 273-295.

Raphael, T. E. (1984). Teaching learners about sources of information for answering comprehension questions. Journal of Reading, 27(4), 303-311.

Raphael, T. E. (1986). Teaching question answer relationships, revisited. The Reading Teacher, 39(6), 516-522.

Readence, J. E., Bean, T. W. & Baldwin, R. S. (1992). Content area reading: An integrated approach. (4th. Ed.). Dubuque, IA: Kendall Hunt.

Reinking, D. (1986). Integrating graphic aids into content area instruction: The graphic information lesson. Journal of Reading, 30(2), 146-151.

Santa, C., Dailey, S., & Nelson, M. (1985). Free-response and opinion-proof: A reading and writing strategy for middle grade and secondary teachers. Journal of Reading, 28(4), 346-352.

Shanahan, T. (1988). The reading-writing relationship: Seven instructional principles. The Reading Teacher, 41(7), 636-647.

Simpson, M. L., & Nist, S. L. (1984). PLAE: A model for planning successful independent learning. Journal of Reading, 28(3), 218-223.

Simpson, M. L., Stahl, N. A., & Hayes, C. G. (1989). PORPE: A research validation. Journal of Reading, 33(1), 22-28.

Smith, C. C., & Bean, T. W. (1980). The guided writing procedure: Integrating content teaching and writing improvement. Reading World, 19(3), 290-294.

Stevens, K. C. (1982). Can we improve reading by teaching background information? Journal of Reading, 25(4), 326-329.

Schwartz, R. M., & Raphael, T. E. (1985). Concept of definition: A key to improving students' vocabulary. Reading Teacher, 39(2), 198-205.

Townsend, M. A., & Clarihew, A. (1989). Facilitating children's comprehension through the use of advance organizers. Journal of Reading Behavior, 21(1), 15-35.

Weaver, C. A. , III, & Kintsch, W. (1991). Expository text. In Barr, Kamil, Mosenthal, & Pearson (Eds.), Handbook of Reading Research; Vol. 7. (pp. 230-245). New York: Longman.

Weitzel, A. (1990). Higher education communication curricula outside of the U.S.: An inventory and data report. (ERIC Document Reproduction Service No. ED

3222562)

Wolfson, B. J., Manning, G., & Manning, M. (1984). Revisiting what children say their reading interests are. Reading World, 24(2), 4-10.

Yopp-Nolte, R., & Singer, H. (1985). Active comprehension: Teaching a process of reading comprehension and its effects on reading achievement. The Reading Teacher, 39(1), 24-31.

Zakaluk, B. L, Samuels, S. J., & Taylor, B. M. (1986). A simple technique for estimating prior knowledge: Word association. Journal of Reading, 30(1), 56-60.